



MODEL 2202 **(1989 - MSRP \$549.00)**

OWNER'S OPERATION MANUAL AND INSTALLATION GUIDE

INTRODUCTION

Power Supply: Self oscillating for reliability and efficiency. The transformer is epoxy dipped for extreme vibration resistance. Banks of high-speed TO-3 switching transistors provide massive current reserves.

Output Stages: Transformerless, direct coupled and fully complimentary. Output transistors are high current and low distortion **TO-3** devices, operating at a fraction of their limitations.

Protection: Our stable amplifier design is made virtually indestructible by three protection circuits. One is a precision thermal protection circuit, which prevents damage from high frequency oscillation, or an excessive ambient temperature. The second protection circuit is a current sensing device guarding against instantaneous abnormalities, such as short circuits. Both of these circuits automatically reset. The third form of protection guards against component damage from reversed power connections.

Construction Features: Our unique, variable input sensitivity control permits optimal signal matching for lowest noise and lowest distortion with virtually any source. All components used are rated for at least 150% of their intended use, and are mounted on double-sided fiberglass epoxy circuit boards.

Quality Control: In-house construction of critical components like transformer and chassis, as well as total assembly, allows **LINEAR POWER™** to maintain uniform quality. **100%** of the finished units are tested, then burned in for four hours, and tested again. Amplifiers, which pass this rigorous test, have truly earned the **LINEAR POWER™** logo.

INSTRUCTIONS

Read the following instructions through completely. If they appear to complex, we recommend you have an authorized **LINEAR POWER™** dealer do the work.

MOUNTING

1. The amplifier works best if it is kept as cool as possible. Mount in a position that allows air to flow freely through the fins. Be sure there is ample space above the amplifier to avoid trapping heated air rising from the amplifier. The amplifier should not be mounted upside down. Avoid mounting any amplifier in the dash or on the firewall to avoid noises being radiated directly onto the case.
2. Mount the amplifier in a position that allows ample room for gain adjustments, and the installation, removal and attachment of leads.
3. The case of your amplifier is designed to act as a noise shield. To maintain this protection, be sure the metal case of the amp does not touch the metal of the car. Do not remove or damage the rubber grommets, which provide electrical insulation and vibration isolation.

WIRING

1. Disconnect the negative ground cable from your vehicle's battery before making any power connections to your amplifier.
2. Connect the black negative power wires from the amp to a solid frame member via a bolt or self-tapping screw. This connection must be to a clean, unpainted surface. Always attach the ground wire first when installing this amplifier, and disconnect the ground last when removing this amp from the system.
3. Two fuses of the proper size must be installed in line with the main power in order to prevent damage to your wiring. They should be connected within 18 inches of the battery on the positive terminal. Use the fuse holders and fuses provided, and replace only with the same size fuses. The **Model 2202** uses two **AGC 30** fuses. Do not install fuses until you have completed installing the amplifier.

WARNING: USE OF OVERSIZE FUSES WILL DAMAGE YOUR AMPLIFIER

4. The other end of the fuse holders should be connected to the positive power wire from the amplifier. To extend the length of the power lead, use two 12 gauge wires or larger to reduce power loss. A single 8 gauge or larger wire may be substituted, but don't use smaller wires.

5. The red and white wire acts as an electrical switch to turn the amplifier on and off. It should be connected to the power antenna lead from the radio. Where no power antenna lead exists, a source of 12 volts connected through a toggle switch will do. Do not connect the red and white wire directly to a source that will leave the amplifier permanently on as this will drain the battery.

6. The RCA (Phono) jacks will accommodate either high or low level signals, ranging from 200 mV to 5 volts. For low-level signals, always use shielded cable and avoid routing signal cables in the vicinity of any power wires. The center pin of the RCA plug is ALWAYS the positive input connection.

7. As shipped from the factory, the **Model 2202** will be set up as a normal stereo amplifier, and ready for a 4 ohm load on each channel. If you wish to engage one of the optional functions of this amplifier, remove the main power fuses to avoid the risk of electrical shock from the high voltage present inside the case of the amp, then remove the bottom cover.

BRIDGED MONO OPERATION

Locate the switch mounted on the printed circuit board near the speaker connector marked: "**St(Stereo) or Br(Bridged)**." Move to "**Br/Bridged**" position. The left positive speaker wire is now the + speaker output, with the right positive speaker wire becoming the - speaker output. The two negative speaker outputs will **not** be used. The Right RCA input is nonfunctional with the amp switched to **bridged mode**. The Left and the Right RCA input cables should be "Y"ed together (summed mono signal input) and inserted in the Left RCA input only.

The wiring for the bridged mono mode is as follows:

With the connector end of the amplifier facing you, top side up, the speaker terminal block is arranged: **LEFT (-); LEFT (+); RIGHT (+); RIGHT (-)**. The mono mode uses the **LEFT (+)** and **RIGHT (+)** connections. An electronic crossover, such as the **XO3**, should be used to limit the frequency range to the input of the amplifier for best results.

TWO-OHM CAPABILITY

Unplug the two jumper wires near the four large filter capacitors from the lugs marked 4 ohm and press them firmly back onto lugs marked 2 ohm. This will allow the amplifier to operate into a 2-ohm stereo load on each channel, or a 4-ohm mono load when used in bridged mono mode.

SPEAKER OUTPUT - MODEL 2202

The output current capability of the 2202 exceeds the rating of standard speaker plugs. To ensure a good connection with this much power, a terminal strip is used. The speaker cables can be brought directly to the amplifier and connected as follows for stereo use: **LEFT (-); LEFT (+); RIGHT (+); RIGHT (-)**.

OPERATION / ADJUSTMENT

For any system to operate at minimum distortion with minimum noise and still reach full power output, the equipment should be aligned to operate at the same point on the distortion curve at the same time. In a basic system, using a single amplifier, set the amp sensitivity adjustment to minimum, turn the deck up until it just starts to distort, then back down slightly. This is the point where the output of the deck is cleanest. Now, bring the sensitivity control of the amp up until it just starts to distort, and back it down slightly. This will allow the amp and the deck to reach maximum usable output at the same time.

GENERAL TROUBLESHOOTING

NO SOUND: Check all connections. Check main power fuses. Check accessory fuse. With a trouble light or meter, be sure +12v is present at the amplifier on the power wires and the red/white turn-on wire. Check for a good ground connection. Check by substitution, or other method, for proper operation of music source.

BLOWS FUSES: Check all connections to be sure power wires and speaker wires do not touch each other or ground. Re-check polarity of main power wires. Check impedance of speaker loads and setting of the internal power taps to insure proper match.

SHUTS OFF: As this amplifier is equipped with thermal and short circuit shut-down electronics, in the event of high ambient temperature or improper speaker impedances, the amp will turn itself off. To avoid damage to speakers, turn down the volume while waiting for the amp to turn itself back on. If this occurs repeatedly, use a fan to cool the amplifier and check for proper speaker loads and connections.

SERVICE OR REPAIR

To obtain modification, service or repair, please contact our **ONLY Authorized LINEAR POWER™ Product Service Center:**

T.I.P.S. INC.
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SPECIFICATIONS

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RATING	4 OHM	2 OHM
Minimum continuous average power output per channel both channels driven, from 20HZ to 20KHZ with no more than 0.09% total harmonic distortion	110	110**
Bridged mono power ratings (14.4Volts DC operation)	285 (8 ohm spkr)	285**(4 ohm spkr)
Frequency Response +-1dB	19HZ to 30KHZ	
Signal to noise ratio (A-weighted)	95 or greater	
Damping factor @ 4 Ohms	210 at all frequencies	
Input sensitivity for rated output at minimum and maximum gain settings	150 mV to 5V	
Maximum rated current	38A	50A
Input impedance	50K OHM	
Rise time (Slew rate)	16v/micro Second	
Dimensions	3.0"H x 9.5 "W x 9.75"L	
Fuse Rating (2 x 30 Amp AGC)	60 A	

** 2-ohm power rating is tested with the power supply taps in the 2-ohm setting, leaving the taps in the 4 ohm setting will generate considerable additional power however it is not suggested or recommended.

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